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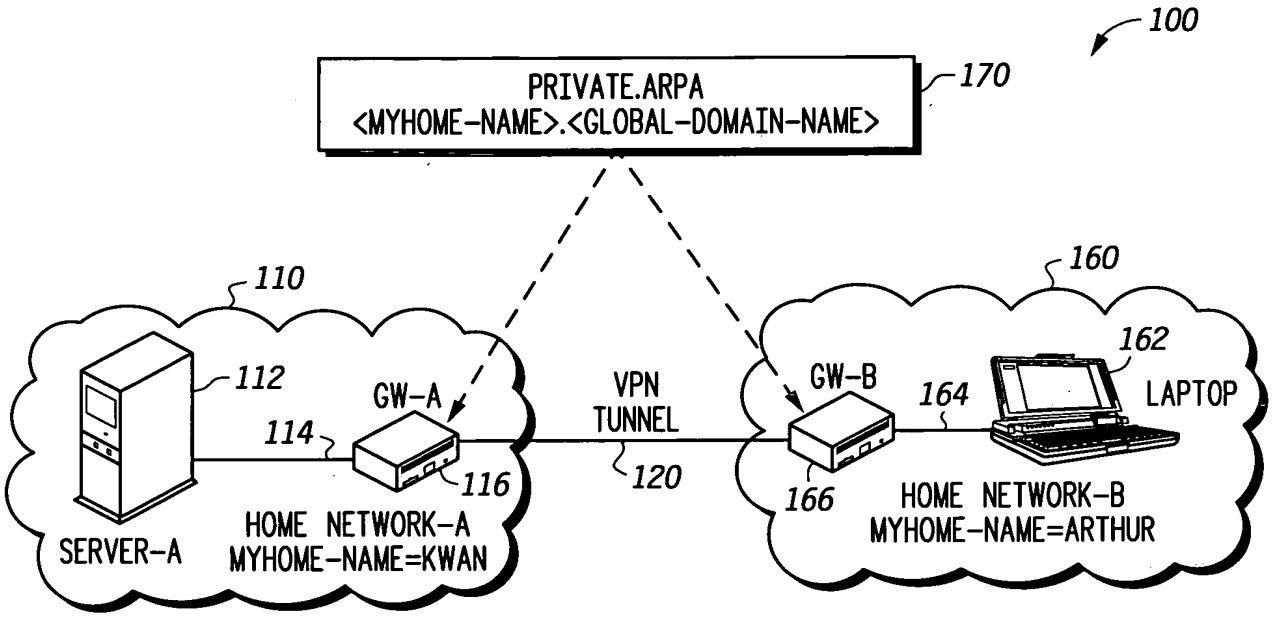

FIG. 1

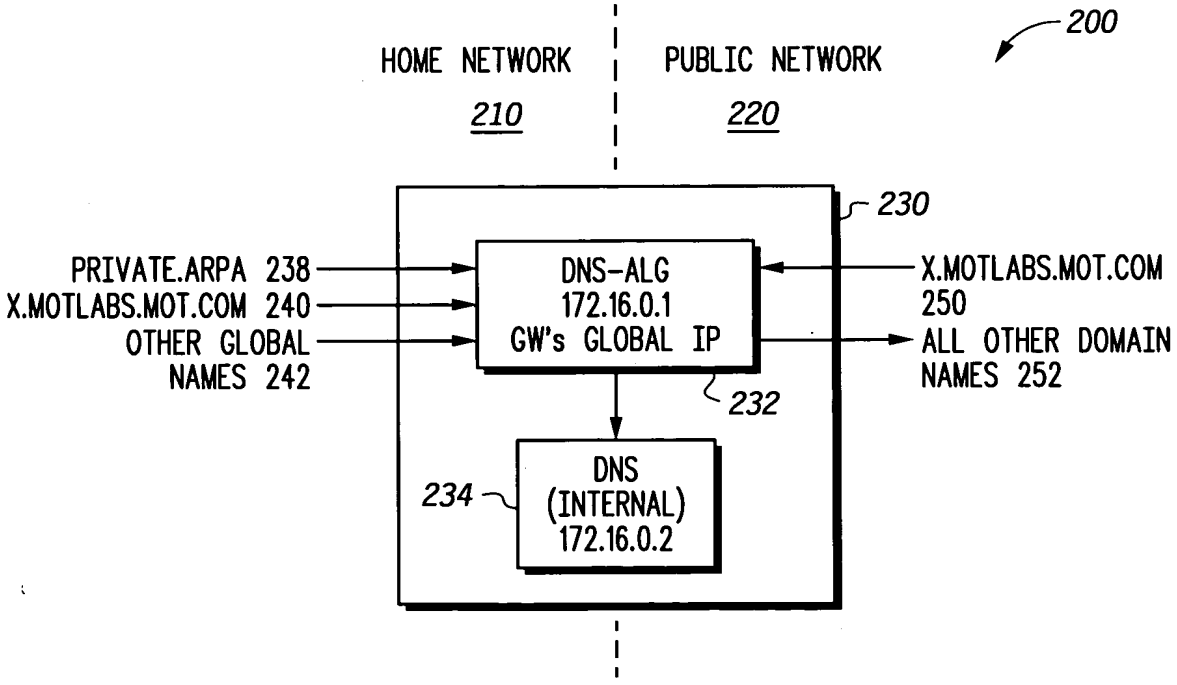

FIG. 2

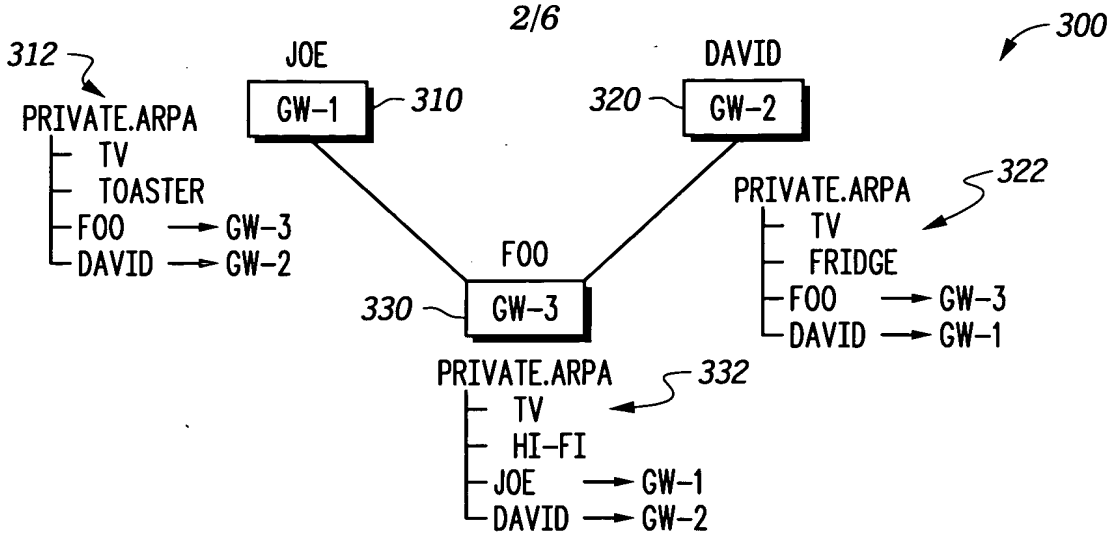

FIG. 3

400

```
$TTL    86400   ; 1 DAY
@           IN    SOA     PRIVATE.ARPA.ROOT.GATEWAY.PRIVATE.ARPA. (
                                2002041200    ; SERIAL
                                1H            ; REFRESH
                                5M            ; RETRY
                                1W            ; EXPIRE
                                1H            ; MINIMUM
                                )
            IN          NS    GATEWAY.PRIVATE.ARPA
GATEWAY     IN          A           172.16.200.1
DAVID       IN          NS          NS.DAVID.PRIVATE.ARPA
NS.DAVID.PRIVATE.ARPA   IN          A           172.16.10.1
JOE         IN          NS          NS.JOE.PRIVATE.ARPA
NS.JOE.PRIVATE.ARPA     IN          A           172.16.20.1
```

ADDED DYNAMICALLY AFTER JOINING KWAN'S NETWORK SUCCESSFULLY

FIG. 4

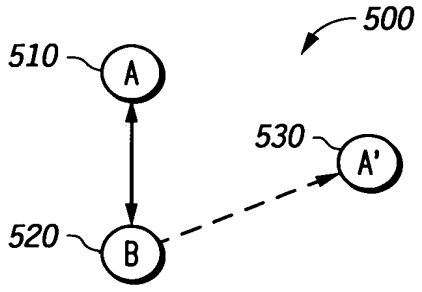

FIG. 5(a)

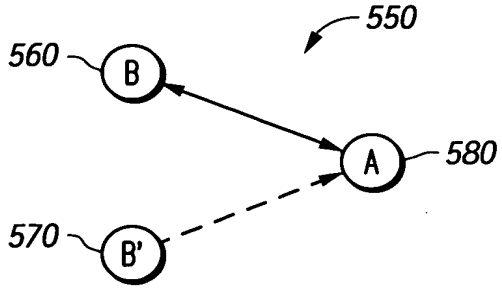

FIG. 5(b)

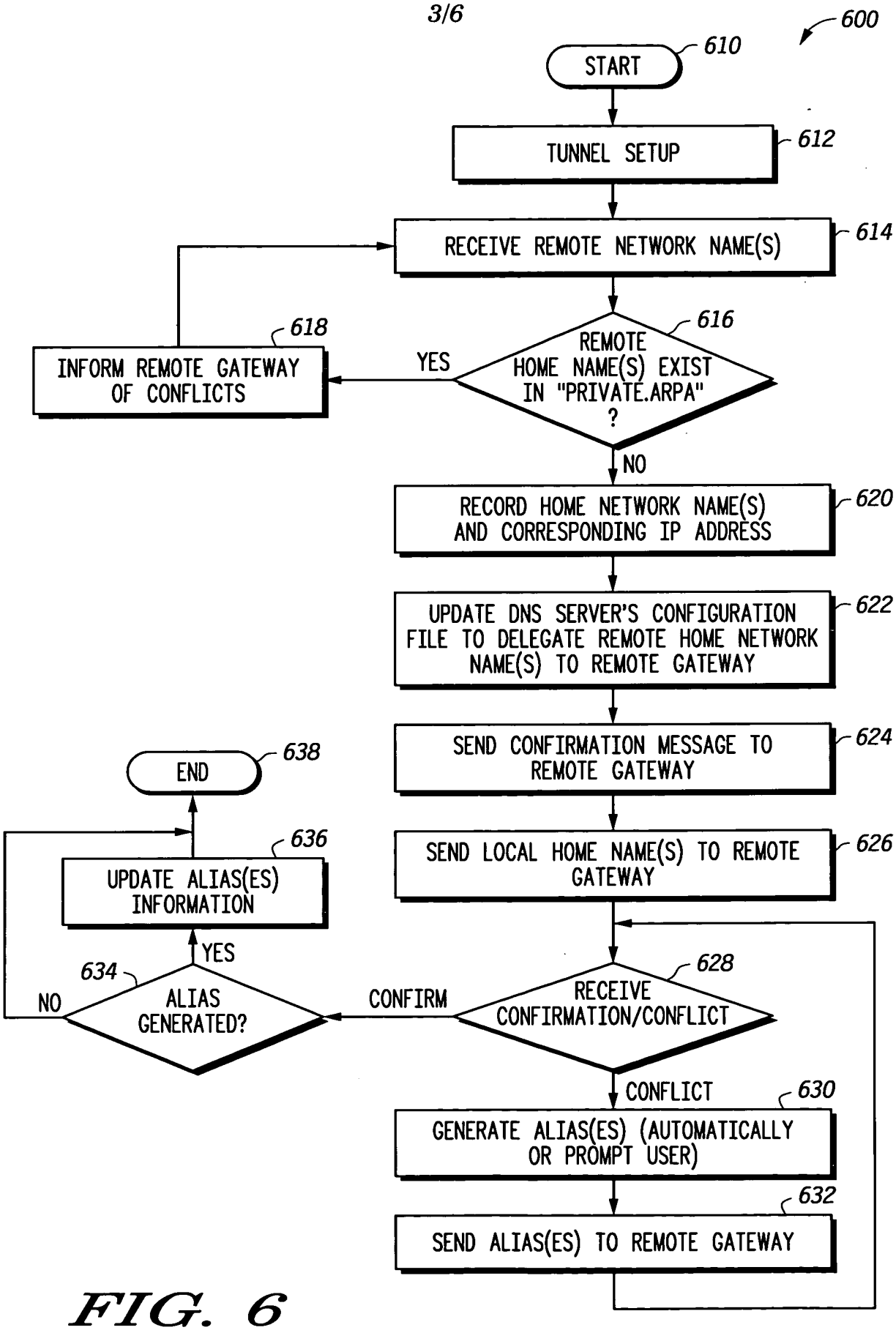
600
START
610
TUNNEL SETUP
612
RECEIVE REMOTE NETWORK NAME(S)
614
REMOTE HOME NAME(S) EXIST IN "PRIVATE.ARPA" ?
616
YES
INFORM REMOTE GATEWAY OF CONFLICTS
618
NO
RECORD HOME NETWORK NAME(S) AND CORRESPONDING IP ADDRESS
620
UPDATE DNS SERVER'S CONFIGURATION FILE TO DELEGATE REMOTE HOME NETWORK NAME(S) TO REMOTE GATEWAY
622
SEND CONFIRMATION MESSAGE TO REMOTE GATEWAY
624
SEND LOCAL HOME NAME(S) TO REMOTE GATEWAY
626
RECEIVE CONFIRMATION/CONFLICT
628
CONFIRM
ALIAS GENERATED?
634
NO
YES
UPDATE ALIAS(ES) INFORMATION
636
END
638
CONFLICT
GENERATE ALIAS(ES) (AUTOMATICALLY OR PROMPT USER)
630
SEND ALIAS(ES) TO REMOTE GATEWAY
632

FIG. 6

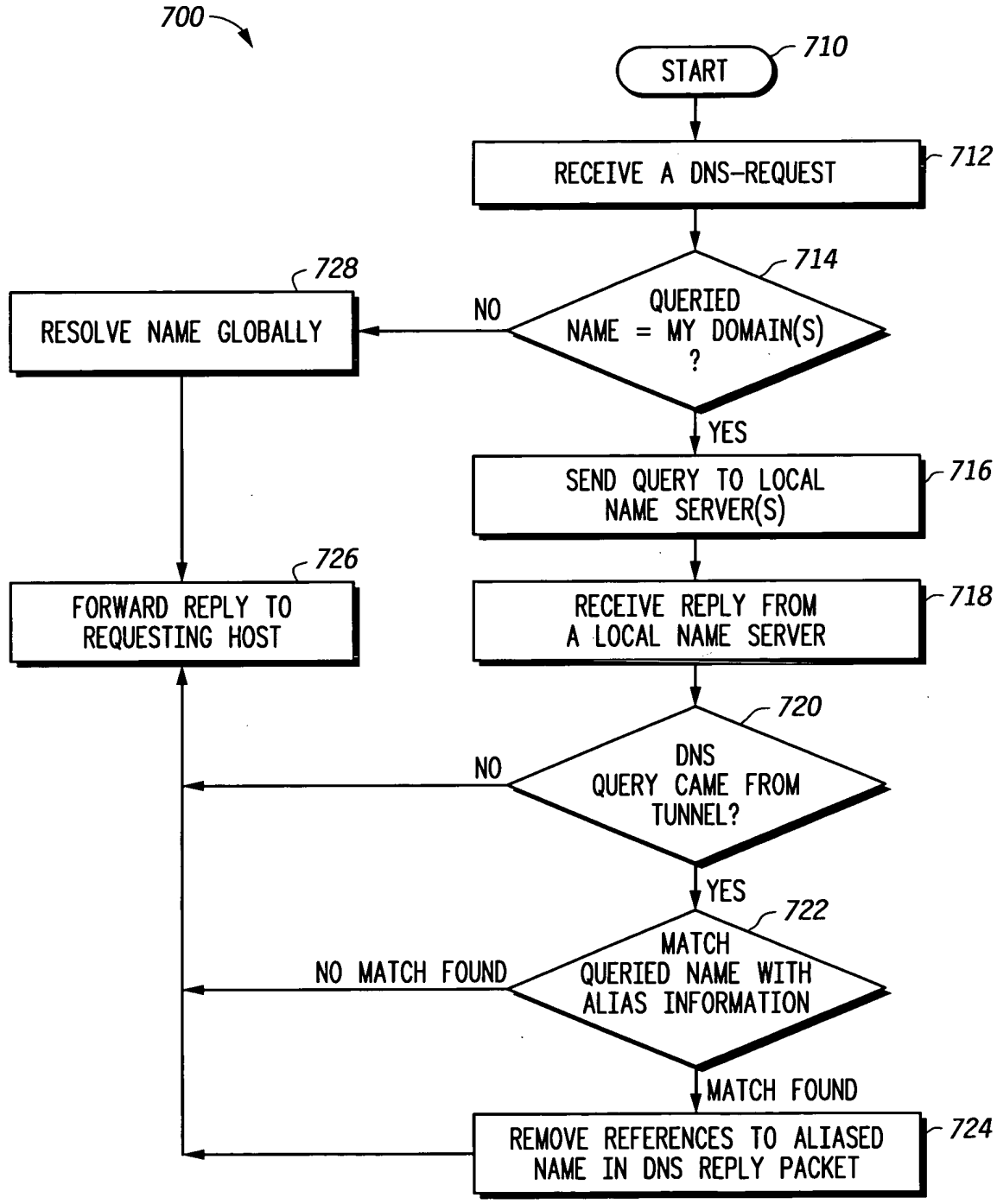
700
START
710
RECEIVE A DNS-REQUEST
712
QUERIED NAME = MY DOMAIN(S) ?
714
NO
YES
RESOLVE NAME GLOBALLY
728
SEND QUERY TO LOCAL NAME SERVER(S)
716
FORWARD REPLY TO REQUESTING HOST
726
RECEIVE REPLY FROM A LOCAL NAME SERVER
718
DNS QUERY CAME FROM TUNNEL?
720
NO
YES
MATCH QUERIED NAME WITH ALIAS INFORMATION
722
NO MATCH FOUND
MATCH FOUND
REMOVE REFERENCES TO ALIASED NAME IN DNS REPLY PACKET
724

FIG. 7

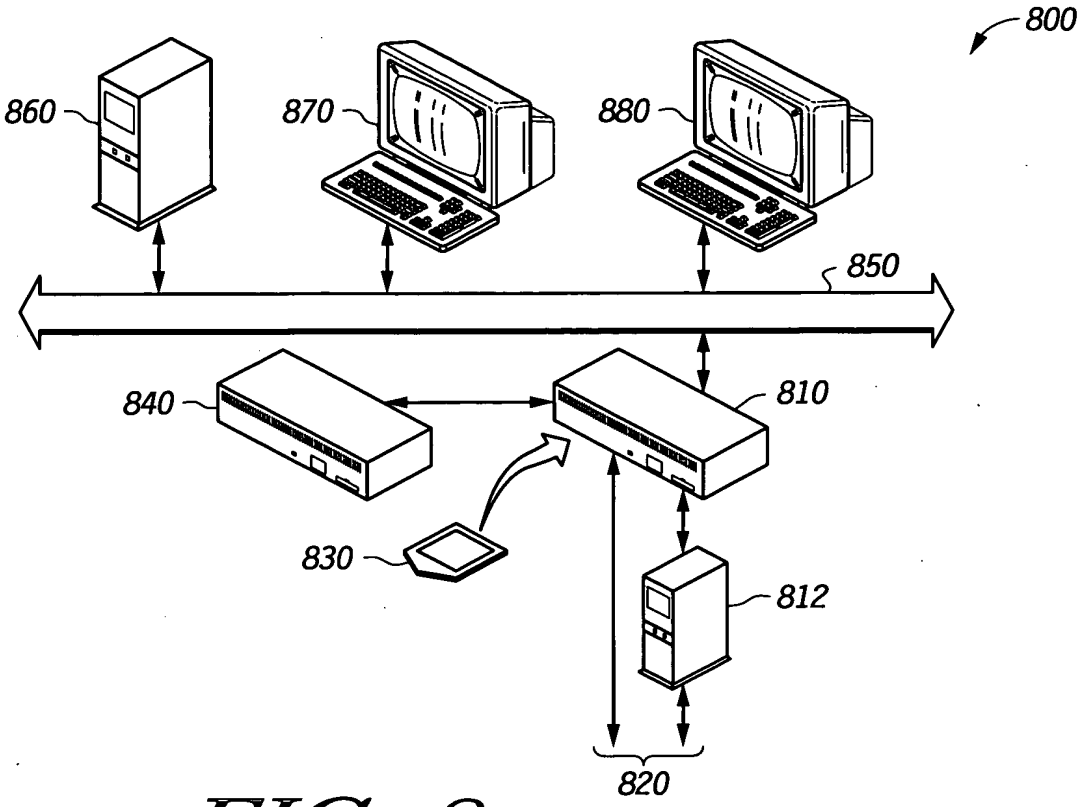
800
860
870
880
850
840
810
830
812
820

FIG. 8

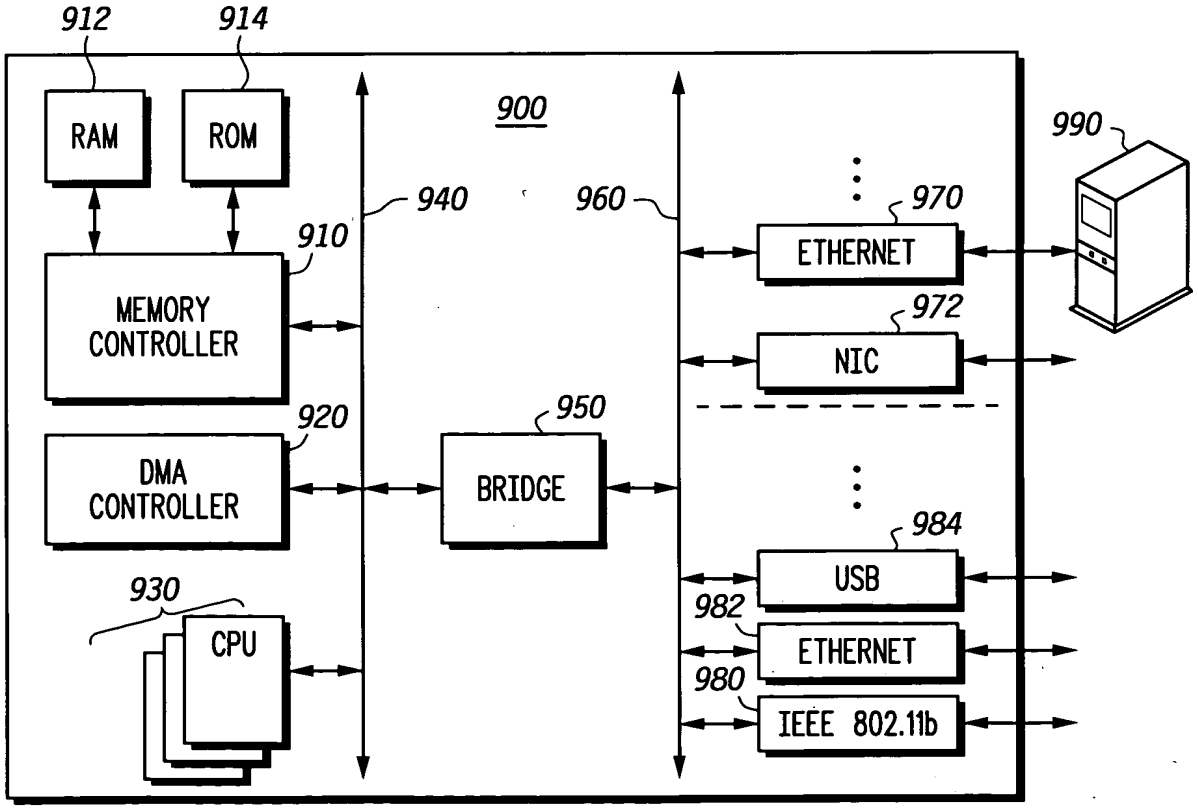
912
914
900
RAM
ROM
940
960
990
910
MEMORY CONTROLLER
970
ETHERNET
972
NIC
920
950
DMA CONTROLLER
BRIDGE
984
USB
930
982
CPU
ETHERNET
980
IEEE 802.11b

FIG. 9

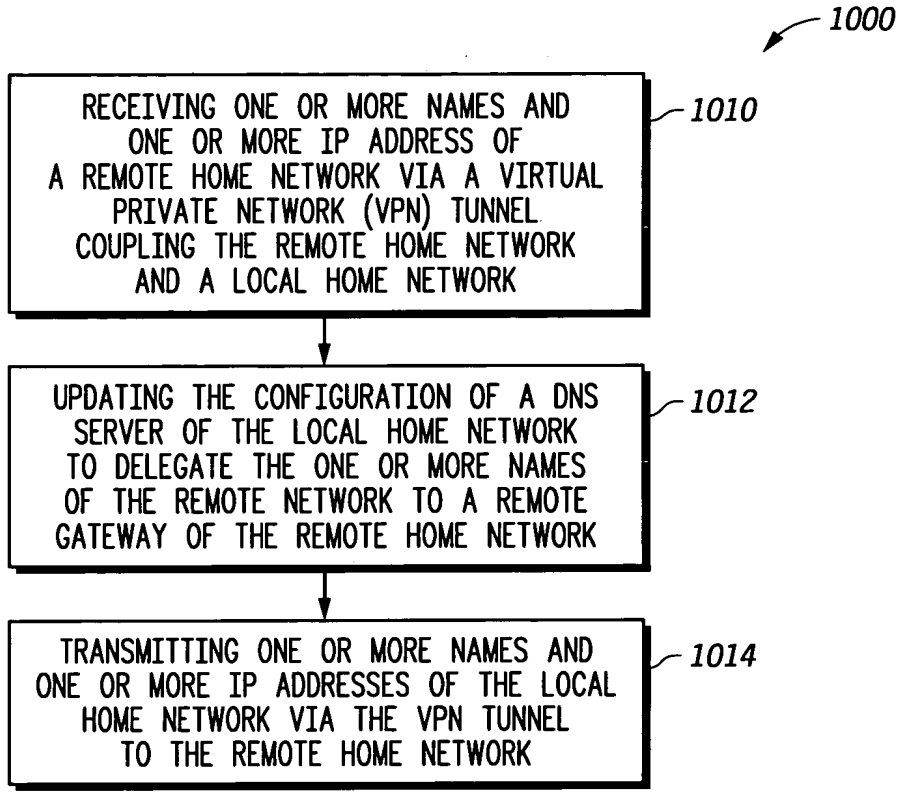
1000
RECEIVING ONE OR MORE NAMES AND ONE OR MORE IP ADDRESS OF A REMOTE HOME NETWORK VIA A VIRTUAL PRIVATE NETWORK (VPN) TUNNEL COUPLING THE REMOTE HOME NETWORK AND A LOCAL HOME NETWORK
1010
UPDATING THE CONFIGURATION OF A DNS SERVER OF THE LOCAL HOME NETWORK TO DELEGATE THE ONE OR MORE NAMES OF THE REMOTE NETWORK TO A REMOTE GATEWAY OF THE REMOTE HOME NETWORK
1012
TRANSMITTING ONE OR MORE NAMES AND ONE OR MORE IP ADDRESSES OF THE LOCAL HOME NETWORK VIA THE VPN TUNNEL TO THE REMOTE HOME NETWORK
1014

FIG. 10

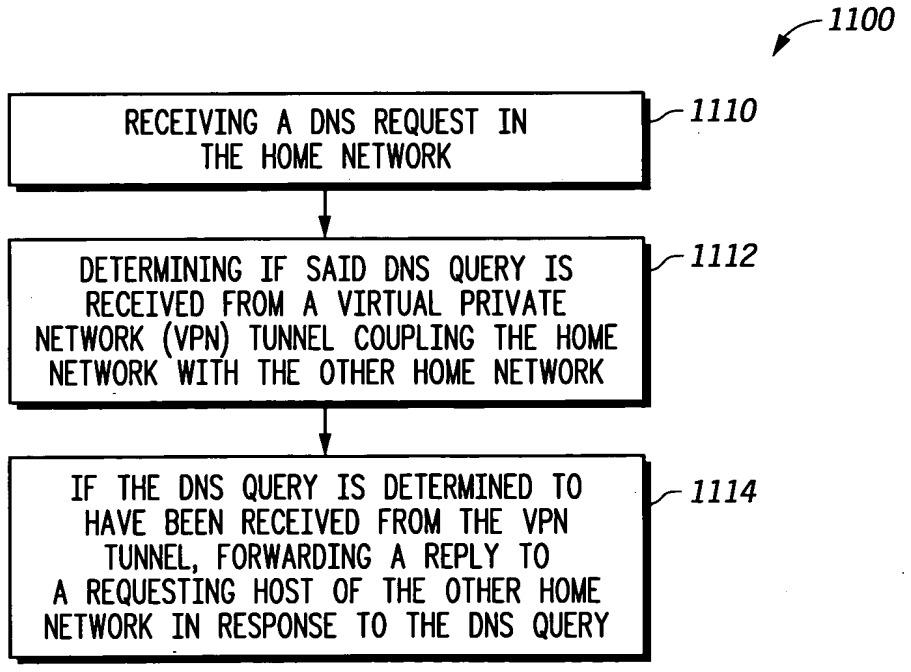
1100
RECEIVING A DNS REQUEST IN THE HOME NETWORK
1110
DETERMINING IF SAID DNS QUERY IS RECEIVED FROM A VIRTUAL PRIVATE NETWORK (VPN) TUNNEL COUPLING THE HOME NETWORK WITH THE OTHER HOME NETWORK
1112
IF THE DNS QUERY IS DETERMINED TO HAVE BEEN RECEIVED FROM THE VPN TUNNEL, FORWARDING A REPLY TO A REQUESTING HOST OF THE OTHER HOME NETWORK IN RESPONSE TO THE DNS QUERY
1114

FIG. 11